

IN THE CLAIMS

1. (original) An isolated nucleic acid sequence which encodes a polypeptide with desaturase activity, selected from the following group:
  - a) a nucleic acid sequence with the sequence shown in SEQ ID NO: 1,
  - b) nucleic acid sequences which, as a result of the degeneracy of the genetic code, are derived from the nucleic acid sequence shown in SEQ ID NO: 1,
  - c) derivatives of the nucleic acid sequence shown in SEQ ID NO: 1 which encode polypeptides with the amino acid sequences shown in SEQ ID NO: 2 and which have at least 75% homology at amino acid level without substantially reducing the enzymatic activity of the polypeptides.
2. (currently amended) ~~An amino acid sequence A protein~~ encoded by a nucleic acid sequence as claimed in claim 1.
3. (currently amended) ~~An amino acid sequence A protein~~ as claimed in claim 2, encoded by the sequence shown in SEQ ID NO: 1.
4. (original) A nucleic acid construct comprising a nucleic acid sequence as claimed in claim 1, where the nucleic acid sequence is linked to one or more regulatory signals.
5. (previously presented) A vector comprising a nucleic acid sequence as claimed in claim 1 or a nucleic acid construct comprising said nucleic acid sequence linked to one or more regulatory signals.
6. (previously presented) An organism comprising at least one nucleic acid sequence as claimed in claim 1 or at least one nucleic acid construct comprising said nucleic

acid linked to one or more regulatory signals..

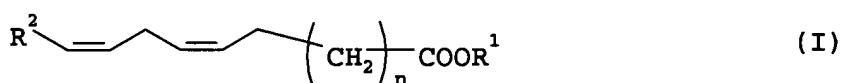
7. (original) An organism as claimed in claim 6, which is a plant, a microorganism or an animal.
8. (previously presented) A transgenic plant comprising a functional or nonfunctional nucleic acid sequence as claimed in claim 1 or a functional or nonfunctional nucleic acid construct comprising said nucleic acid linked to one or more regulatory signals.
9. (previously presented) A process for the preparation of unsaturated fatty acids, which comprises introducing at least one nucleic acid sequence as claimed in claim 1 or at least one nucleic acid construct comprising said nucleic acid linked to one or more regulatory signals into an oil-producing organism, growing this organism, isolating the oil contained in the organism and liberating the fatty acids contained in the oil.
10. (previously presented) A process for the preparation of triglycerides with an increased content of unsaturated fatty acids, which comprises introducing at least one nucleic acid sequence as claimed in claim 1 or at least one nucleic acid construct comprising said nucleic acid linked to one or more regulatory signals into an oil-producing organism, growing this organism and isolating the oil contained in the organism.
11. (previously presented) A process for the preparation of saturated fatty acids, which comprises introducing at least one nonfunctional nucleic acid sequence as claimed in claim 1 or at least one nonfunctional nucleic acid construct comprising

said nucleic acid linked to one or more regulatory signals into an oil-producing organism, growing this organism, isolating the oil contained in the organism and liberating the fatty acids contained in the oil.

12. (previously presented) A process for the preparation of triglycerides with an increased content of saturated fatty acids, which comprises introducing at least one nonfunctional nucleic acid sequence as claimed in claim 1 or at least one nonfunctional nucleic acid construct comprising said nucleic acid linked to one or more regulatory signals into an oil-producing organism, growing this organism and isolating the oil contained in the organism.
13. (previously presented) A process as claimed in claim 9, wherein the unsaturated fatty acids have an increased calendulic acid content.
14. (previously presented) A method as claimed in claim 9, wherein the organism is a plant or a microorganism.
15. (original) An unsaturated fatty acid prepared by a process as claimed in claim 9.
16. (original) A triglyceride with an increased content of unsaturated fatty acids prepared by a process as claimed in claim 10.
17. (original) A saturated fatty acid prepared by a process as claimed in claim 11.
18. (original) A triglyceride with an increased content of saturated fatty acids prepared by a process as claimed in claim 12.
19. (previously presented) A method for isolating a genomic sequence comprising homology screening with the nucleic acid sequence as claimed in claim 1 or a fragment thereof.

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20. (original) An enzyme which converts a fatty acid of the structure I,

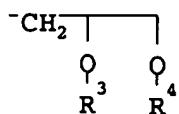


which has two double bonds separated from each other by a methylene group, to give a triunsaturated fatty acid of the structure II,



the three double bonds of the fatty acid being conjugated and the substituents and variables in the compounds of the structures I and II having the following meanings:

$\text{R}^1$  = hydrogen, substituted or unsubstituted, unsaturated or saturated, branched or unbranched  $\text{C}_1\text{--C}_{10}\text{--alkyl--}$ ,



R<sup>2</sup> = substituted or unsubstituted, unsaturated or saturated C<sub>1</sub>–C<sub>9</sub>–Alkyl–

R<sup>3</sup> and R<sup>4</sup> independently of one another are hydrogen, substituted or  
unsubstituted, saturated or unsaturated, branched or unbranched  
C<sub>1</sub>–C<sub>22</sub>–alkylcarbonyl or phospho–, n = 1 to 14.